

1 Teresa M. Corbin (SBN 132360)
Denise M. De Mory (SBN 168076)
2 Jaclyn C. Fink (SBN 217913)
HOWREY LLP
3 525 Market Street, Suite 3600
4 San Francisco, California 94105
Telephone: (415) 848-4900
5 Facsimile: (415) 848-4999

6 Attorneys for Plaintiff SYNOPSISYS and
7 Defendants AEROFLEX INCORPORATED,
AEROFLEX COLORADO SPRINGS, INC.,
8 AMI SEMICONDUCTOR, INC., MATROX
ELECTRONIC SYSTEMS, LTD., MATROX
9 GRAPHICS INC., MATROX
INTERNATIONAL CORP., and MATROX
10 TECH, INC.

11 UNITED STATES DISTRICT COURT
12 NORTHERN DISTRICT OF CALIFORNIA
13 SAN FRANCISCO DIVISION

14 RICOH COMPANY, LTD.,
15 Plaintiff,

16 vs.

17 AEROFLEX INCORPORATED, AMI
18 SEMICONDUCTOR, INC., MATROX
ELECTRONIC SYSTEMS LTD., MATROX
19 GRAPHICS INC., MATROX
INTERNATIONAL CORP., MATROX TECH,
20 INC., AND AEROFLEX COLORADO
SPRINGS, INC.,
21 Defendants.

23 SYNOPSISYS, INC.,
24 Plaintiff,

25 vs.

26 RICOH COMPANY, LTD.,
27 Defendant.

Case No. C03-4669 MJJ (EMC)

Case No. C03-2289 MJJ (EMC)

**REPLY MEMORANDUM IN SUPPORT OF
MOTION FOR SUMMARY JUDGMENT OF
INVALIDITY OF CLAIMS 13-17 OF U.S.
PATENT NO. 4,922,432**

[SUMMARY JUDGMENT MOTION NO. 4]

Date: September 26, 2006
Time: 9:30 a.m.
Place: Courtroom 11, 19th Floor
Judge: Hon. Martin J. Jenkins

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. KOWALSKI ANTICIPATES REGARDLESS OF HOW THE CLAIM ELEMENTS ARE MAPPED ONTO THE REFERENCE	2
A. The Technology-Sensitive Hardware Cells Are “Hardware Cells” In Accordance With Dr. Soderman’s Infringement Analysis	2
B. VDAA Anticipates Under Any Mapping of “Hardware Cells”	5
C. Ricoh’s arguments on “selective application” and “libraries” are flawed and based on previously undisclosed expert opinions.....	9
D. The VDAA System Expert Rules Are Selectively Applied.	9
1. The Predefined Operators Satisfy Claim 13’s Limitations [A] & [D] Given Ricoh’s Infringement Position.....	10
E. There is no dispute that Claims 15 and 17 are redundant and invalid.	10
F. Ricoh’s Miscellaneous Evidentiary Complaints Fail To Preclude Summary Judgment.	11
1. The evidence of Dr. Kowalski’s further revision of VDAA at AT&T is admissible and uncontroverted.....	11
2. The Kowalski Thesis was published in 1984.	12
3. Defendants are not required to rely upon an expert opinion.	13
III. CONCLUSION	13

1 **I. INTRODUCTION**

2 The question that must be resolved in this motion is not what VDAA discloses — that is clear,
3 no expert testimony is needed to understand it, and, indeed, Ricoh does not dispute any details of what
4 the references disclose. There are thus no factual disputes. Instead, the dispute that Ricoh attempts to
5 raise relates solely to which aspects of VDAA map to each elements of claims 13-17, and then,
6 depending on that mapping, whether VDAA anticipates as a matter of law.

7 Ricoh's opposition to Summary Judgment No. 4 totally misses the mark in that Ricoh failed to
8 appreciate the premise of the Motion: given Dr. Soderman's opinion that the technology-independent
9 cells are the hardware cells because they are what is selected using rules,¹ does VDAA anticipate the
10 asserted claims of the '432 patent? As explained in the opening brief, because Dr. Soderman's opinion
11 about these references fail as a matter of law and fact, summary judgment is appropriate.

12 Ricoh apparently realized this, so Ricoh ran for additional cover and Dr. Soderman came up
13 with new opinions – not expressed in his expert report – to try to survive these references. The Court
14 should disregard these alleged new distinctions, and in any event, they do not change the outcome – if
15 this Court accepts Ricoh's arguments about how the claims should be construed for purposes of
16 infringement, the '432 patent is invalid under the Kowalski references and VDAA. Resolution of this
17 motion should begin and end here. Based on Ricoh's expert report, these references anticipate as a
18 matter of law.

19 Ricoh attempts to create a dispute regarding something that was not raised in Defendants'
20 Motion (Dr. Mitchell's opinion) – not because of any alleged inconsistency – but because what matters
21 is whether Ricoh wins or loses on Dr. Soderman's theory. However, as demonstrated below, it does
22 not matter which mapping of the elements applies – whether Ricoh's infringement mapping, Dr.
23 Soderman's original invalidity mapping, Dr. Soderman's new mapping, or Dr. Mitchell's mapping –
24 VDAA anticipates the asserted claims. Alternatively, the Synopsys tools do not infringe the patent.
25 Summary judgment in favor of Synopsys and the Customer Defendants should be granted.

26
27

 ¹ For this reason that Ricoh's protestations about the claim charts attached to Defendants' Motion are irrelevant.
28

II. KOWALSKI ANTICIPATES REGARDLESS OF HOW THE CLAIM ELEMENTS ARE MAPPED ONTO THE REFERENCE

Dr. Soderman's opinion with regard to what is the definition of "hardware cell" is driven solely by infringement. He claims a hardware cell is anything selected by "rules." Because the SOT tricks (the alleged "rules" in Design Compiler) are only ever used with regard to a gate level technology dependent netlist, Dr. Soderman's opinion is therefore that hardware cells in Design Compiler are the very thing on which SOT tricks operate.

Given this infringement-driven definition of hardware cell (notwithstanding all the intrinsic evidence which is discussed in detail in motion 2), Dr. Soderman says that, because what is selected by VDAA using rules is a technology-independent network, the "hardware cells" in the VDAA system are the modules in the technology-independent hardware network. Dr. Mitchell, for his part, selected the technology-dependent hardware cells which more closely match the hardware cell description in the patent as set forth below. Regardless of the mapping, VDAA anticipates.

A. The Technology-Sensitive Hardware Cells Are "Hardware Cells" In Accordance With Dr. Soderman's Infringement Analysis

Dr. Soderman claims that his identified hardware cells in the technology-independent hardware network are not "hardware cells" under the patent because they are not technology-dependent. His opinion here, however, is totally disingenuous and inconsistent with his infringement opinion. The patent describes in Column 9 the stored data that represents the hardware cells as stored in the set of hardware cells as claimed in Claim 13. *See* Col. 9:21-52. The patent describes that four different levels of information are stored regarding a cell, information ranging from a functional RTL description of the cell down to "geometrical mask level data." *Id.* Also associated with the cell are attributes, such as cell name, description, function, and area, power, and timing attributes. *Id.* Dr. Soderman claims for purposes of infringement, that the Target Technologies Libraries used by the

Defendants meet the hardware cell limitation even though he can only point to a small fraction of the listed information described in Column 9 as being associated with the library.²

The cells in VDAA's technology independent hardware network, an example of which is depicted below,³ are technology sensitive:

² And some of what Dr. Soderman says is transparently false, inconsistent with the patent, and in fact his declaration is internally inconsistent. In paragraph 24, Dr. Soderman describes various "views" of a technology library. He says in one view a technology library "may have very specific geometrical data such as mask level data, including the physical dimensions, forms of shapes of the individual cells." Soderman Decl., ¶24. He also says the basic logic synthesis tool "would not need this information." *Id.* Notwithstanding this sworn testimony as well as the plain language of the patent that geometrical data is mask data (or one of the views he describes), Dr. Soderman says that the attributes (such as those listed in column 9) can be "geometrical data." Indeed, with regard to his analysis of the LSI 10K library, he says area, speed, power, etc. (the only things he can find in that library) represents "geometrical data." *Id.* at 18-19. This is contrary to the plain language of the patent (and his own declaration). Indeed, the things that Dr. Soderman points to as being "geometrical data" are the attributes of the cells as described in Column 9. Compare Col. 9 with Soderman ¶ 18-19. This is not determinative here, but it is illustrative.

³ Compare this Figure with Figure 6 from the patent below:

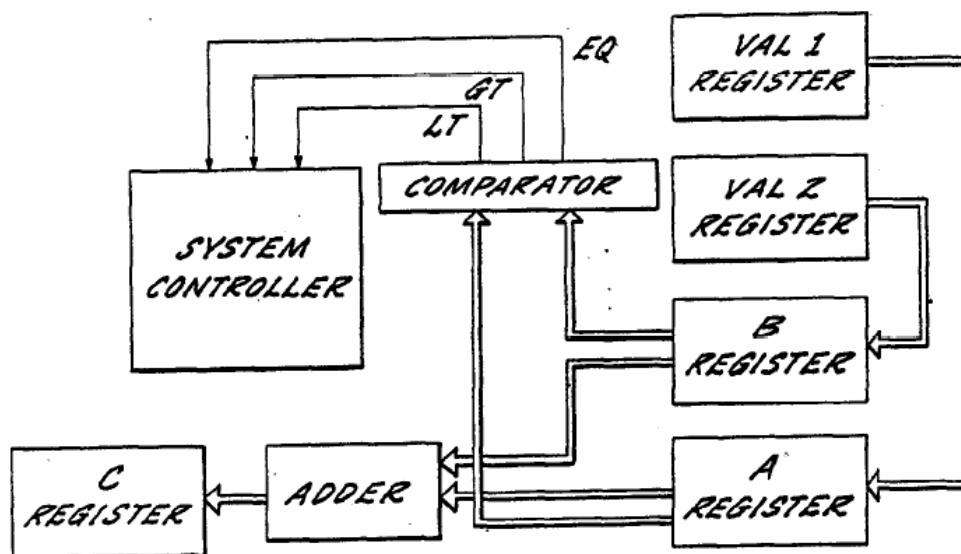


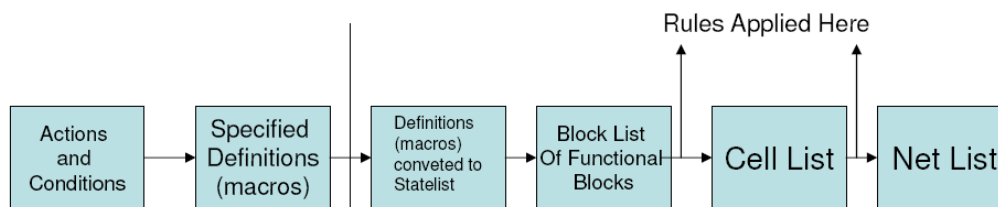
FIG. 6.

B. VDAA Anticipates Under Any Mapping of “Hardware Cells”

In addition, because Dr. Soderman is wrong in his infringement-driven claim interpretation (as explained in the “applying” section of Motion 2), Kowalski anticipates regardless of which mapping applies – Dr. Mitchell’s or Dr. Soderman’s

For purposes of infringement, Dr. Soderman re-writes the claims in such a manner that Kowalski undoubtedly anticipates. Because the only alleged rules in Design Compiler are SOT tricks, and because SOT tricks are only applied to a technology dependent mapped gate level netlist, Dr. Soderman rewrites the final element such that the rules are never applied to the specified definitions (macros) of element E even though plain language (and claim construction) says that cells are selected by applying rules to the specified definitions. Dr. Soderman’s re-writing of the claims is explained in paragraph 28 of his declaration and depicted below:

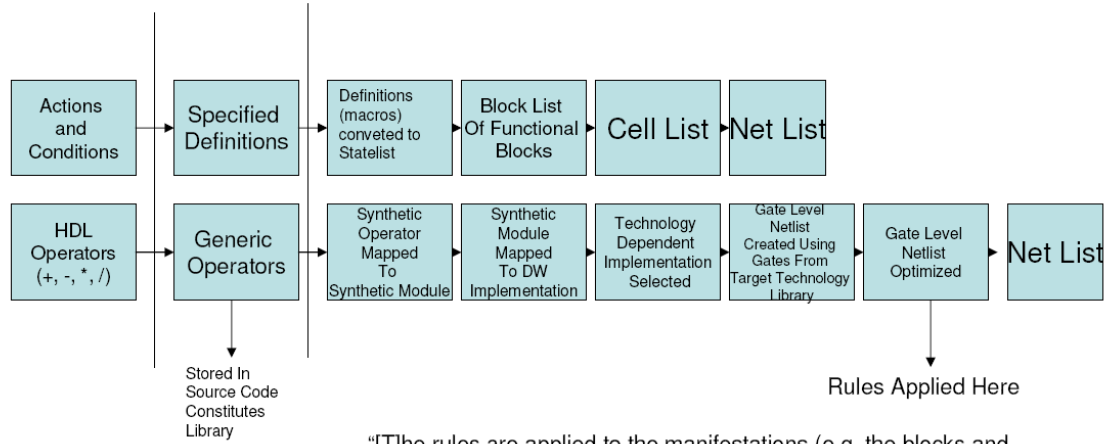
Dr. Soderman’s Opinion For Purposes of Infringement As To The Preferred Embodiment



“[T]he rules are applied to the manifestations (e.g, the blocks and the cell implementations thereof) of the macros. The rules are *never directly applied* to the macros. Thus, in my opinion, one of ordinary skill in the art would have understood that claim13 does not require such direct application of the “cell selection rules.” Soderman at ¶28.

Dr. Soderman's clam interpretation is transparently directed to infringement as depicted below:

Dr. Soderman's Infringement Opinion



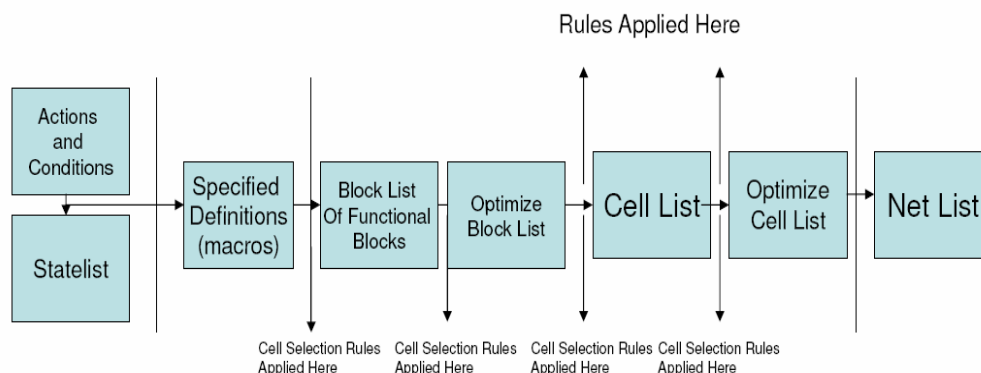
"[T]he rules are applied to the manifestations (e.g, the blocks and the cell implementations thereof) of the macros. The rules are never directly applied to the macros. Thus, in my opinion, one of ordinary skill in the art would have understood that claim13 does not require such direct application of the "cell selection rules." Soderman at ¶28.

Because SOT tricks (so-called rules) are applied to the gate level netlist, Dr. Soderman opines that whatever the rules are applied to are hardware cells.

In addition to completely re-writing the claims, this, however, is completely inconsistent with the cell selection process described in the specification at Column 8, 9, and 10 as depicted below:

What The Patent Says About Dr. Soderman's Opinion Regarding the Preferred Embodiment For Purposes of Infringement

"[T]he rules are applied to the manifestations (e.g. the blocks and the cell implementations thereof) of the macros. The rules are *never directly applied* to the macros. Thus, in my opinion, one of ordinary skill in the art would have understood that claim 13 does not require such direct application of the 'cell selection rules.'" Soderman at ¶28.



The flowchart is converted into an intermediate form (statelist) and input to the Cell Selector. Col. 8:56-57.

The knowledge base of the Cell Selector 32 contains information (rules) relating to: (1) selection of macros (2) merging two macros (3) mapping of macros to cells (4) merging two cells (5) error diagnostics. Col. 8:65-Col. 9:5.

The blocklist is generated from the statelist by the inference engine. Col. 9:11-12.

The netlist is generated after the cells have been selected by the PSCS. Col. 9:64-65.

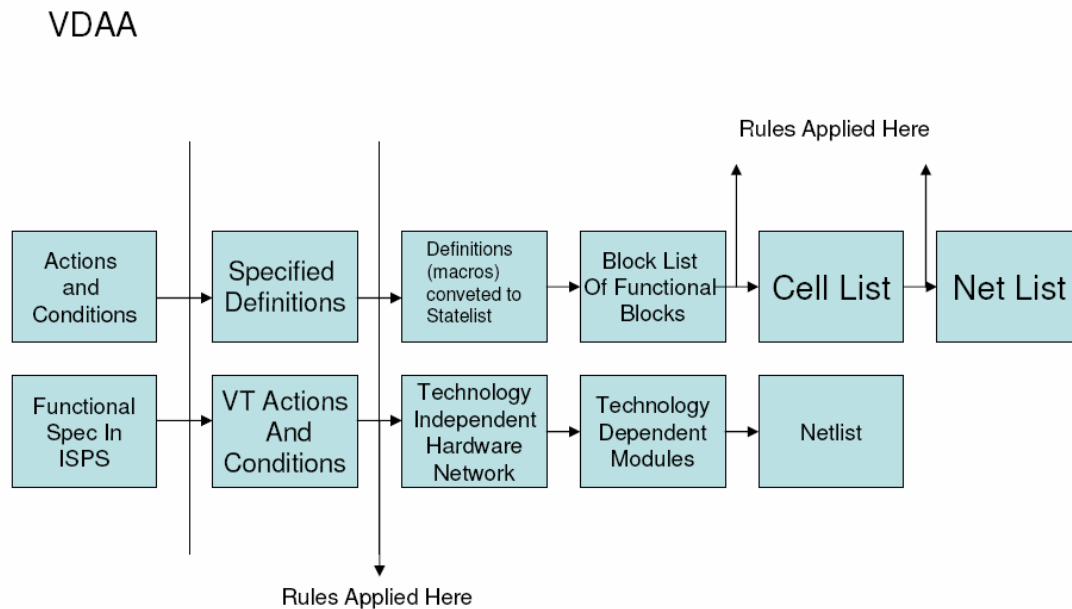
Name of macro used in the cell selection process. Col. 9:52-61. Macro definitions still used as late as netlist generation. Col. 9:65-10:7.

Macro associated with functional blocks. See Fig. 11.

In the cell selection process, cell selection rules are to each step of the process flow, not, as Dr. Soderman's conveniently claims because of his infringement analysis, at the end of the process. Thus, Dr. Soderman's opinion on this issue must be rejected as clearly reading out the preferred embodiment, quite contrary to what he claims.

VDAA, as depicted below,⁴ clearly falls within the parameters of the properly construed claims:

⁴ VDAA also have rules that merge the technology-sensitive hardware cells, eliminate cell, etc. De Mory Decl., Ex. 36 at SP 3990.



Even applying Dr. Soderman’s opinion, however, VDAA anticipates because cell selection rules are used to generate the technology-sensitive hardware network and/or the technology dependent modules or the combination of both. Indeed, Dr. Soderman’s opinion is quite clear: “one or ordinary skill in the art would have understood that claim 13 does not require such a *direct* application of the cell selection rules.” Soderman Decl., ¶ 28. Applying this opinion to the VDAA system, it is irrelevant whether or not the rules are applied to select the technology-sensitive modules, or the technology-dependent modules, because they are applied and cells are selected. It is irrelevant to Dr. Soderman’s opinion whether the rules are directly applied. Indeed, as Ricoh admits, the VDAA hardware network can straightforwardly and directly be converted into hardware cells by “perform[ing] a simple process of matching a hardware cell with a [hardware network] module based on the classtype and attribute of the module.” Opp. at 8. Clearly the rules are applied as part of the “cell selection process”

Whether the box under Technology Independent Hardware Network or Technology Dependent Modules is marked “Hardware Cell,” VDAA anticipates. Thus, either Dr. Soderman’s mapping or Dr. Mitchell’s mapping renders the patent invalid. Or, alternatively, rules ARE required to be applied to

1 the definitions to select cells, and then the Design Compiler system does not infringe as explained in
 2 Motion 2 and depicted clearly above. Either way summary judgment must be granted for Defendants.

3 **C. Ricoh’s arguments on “selective application” and “libraries” are flawed and based**
 4 **on previously undisclosed expert opinions.**

5 The “hardware cell” dispute discussed in the moving papers and above (and shown to be
 6 lacking) is the only dispute that is properly before this Court on this motion. In his Rule 26(a)(2)
 7 expert disclosure, Dr. Soderman provided only one opinion on the difference between the VDAA
 8 system and the ’432 patent — that the modules selected by VDAA are technology independent,
 9 whereas the ’432 patent requires the selection of technology *dependent* hardware cells. Brothers Decl.,
 10 Ex. 31 at 18-20 (Soderman Rebuttal).

11 Recognizing that it cannot prevail on this issue, Ricoh now argues that two other elements are
 12 not met by the Kowalski references — namely, the “selective application” of expert rules and stored
 13 “libraries” of architecture independent actions and conditions — because Defendants do not
 14 demonstrate the presence of these elements in the same manner they argue Ricoh must demonstrate
 15 infringement. *See Opp.* at 16 n.20 (“Defendants should not be allowed to disregard the same standards
 16 for which it demands of Ricoh.”). Ricoh is being disingenuous here. Defendants have set forth their
 17 position on infringement in Motion Nos. 1, 2 and 6. Ricoh disagrees with that position. Defendants
 18 are certainly permitted to argue that, should Ricoh prevail on its infringement analysis, then the same
 19 analysis, when applied to the VDAA and the Kowalski references, would support invalidity.
 20 Nevertheless, as explained below, if the Court adopts Defendants’ noninfringement positions (as
 21 discussed in Motion No. 6), the VDAA system and the Kowalski references remain anticipatory.

22 **D. The VDAA System Expert Rules Are Selectively Applied.**

23 As described in Kowalski, “[t]he rule interpreter pattern matches the working-memory
 24 elements against the rule memory *to decide what rules apply to the given situation.*” *Mot.*, Ex. A
 25 (limitation [F]; emphasis added); *see also* Brothers Decl., Ex. 82 at 28. Ricoh’s only rejoinder to this
 26 clear statement in the prior art is that its expert cannot figure out if this means the rules are selectively
 27 applied. *Opp.* at 16. In truth, Ricoh’s expert has turned a blind eye to the cited references. The
 28

1 Kowalski Thesis, one of the references Ricoh's expert supposedly fully analyzed, clearly and
 2 unambiguously explains that the VDAA rules are selectively applied.

3 The VDAA system contains three key components – the working memory, rule-memory and
 4 rule interpreter. Brothers Decl., Ex. 82 at 11-12 (components of typical knowledge-based expert
 5 system), 27-28 (VDAA contains same). The working memory contains the current state, the rule
 6 memory contains antecedent-consequent rules that operate on the working memory contents, and the
 7 rule interpreter pattern matches the rule memory antecedents against the working memory contents.
 8 Brothers Decl., Ex. 82 at 27-28. When a rule's antecedent matches working memory contents, the rule
 9 interpreter applies the rule's consequents. Brothers Decl., Ex. 82 at 28. This process repeats until
 10 either no more rules fire or a rule ends it. Brothers Decl., Ex. 82 at 28. This well-known process even
 11 has formal names – “forward chaining” or “antecedent reasoning.” Brothers Decl., Ex. 82 at 12, 28.
 12 Selective application of the rules is evidenced by the different numbers of rule firings for different rule
 13 categories. Mot., Ex. A, limitation [C] (citing Kowalski Thesis at 63 (Table 14)).

14 **1. The Predefined Operators Satisfy Claim 13's Limitations [A] & [D] Given**
 15 **Ricoh's Infringement Position.**

16 Similarly, Ricoh's contention that VDAA lacks a “library” of definitions of architecture
 17 independent actions and conditions is meritless. Ricoh claims storing definitions in source code is
 18 sufficient to meet element A. Thus, there is no doubt that the VDAA system meets this limitation in
 19 accordance with Ricoh's infringement position. There is no genuine issue of material fact regarding
 20 limitations [A] and [D], given Ricoh's infringement position, and Defendants' evidence fully supports
 21 summary judgment in their favor.

22 **E. There is no dispute that Claims 15 and 17 are redundant and invalid.**

23 Ricoh improperly mischaracterizes the claim construction in an attempt to save claims 15 and
 24 17 from invalidity. Ricoh contends that claims 15 and 17 are distinct from claim 13 because they
 25 include an explicit limitation of generating “data paths” and “control paths,” respectively, while claim
 26 13 merely optionally contains control paths, data paths and additional interconnections. Opp. at 20-21.
 27 Ricoh misses the point.

Under the Court's claim construction, Claim 13 *implicitly requires* generating both control and data paths, because data and control paths are needed for an ASIC to work. Although Defendants argued at claim construction that the claim 13 netlist was limited to data and control paths, the Court ruled that the interconnections contained in the netlist of Claim 13 included data paths and control paths but was not *limited* to data paths and control paths. Ex. 8 at 24. Consequently, claim 13 *requires* the generation of data and control paths, even though it can include additional interconnections. Based on the Court's construction of claim 13, claims 15 and 17 are redundant in that they only further limit the claim by the added steps of generating data and control paths — which is already done in claim 13. Hence, claims 15 and 17 are invalid under § 112 ¶ 4.

Contrary to Ricoh's argument, the relationship between claim 13 and dependent claims 15 and 17 is not analogous to the relationship between a generic independent claim (e.g., telescope) and a more specific dependent claim (e.g., reflecting telescope). Opp. at 21. A more apt analogy would be to have an independent claim of "reflecting telescope," which implicitly requires a mirror, and then a dependent claim explicitly claiming the "reflecting telescope" of the independent claim "with a mirror." Such a dependent claim adds nothing to the independent claim and is invalid as a matter of law. Mot. at 11.

F. Ricoh's Miscellaneous Evidentiary Complaints Fail To Preclude Summary Judgment.

In its kitchen sink approach to opposing summary judgment motions, Ricoh assails the evidence relied upon by Defendants with a plethora of objections and complaints in the hopes that it will have said something — anything — that will convince the Court to deny this motion on some failure of proof on the part of Defendants. None of Ricoh's arguments, however, can prevent summary judgment.

1. The evidence of Dr. Kowalski's further revision of VDAA at AT&T is admissible and uncontroverted.

Ricoh contends that the VDAA extension developed by Dr. Kowalski at AT&T cannot be prior art because there is no documentary evidence, there is no specific date on which it became publicly

known or used, and there are no specifics about the system's operation. Opp. at 19-20. Defendants' evidence, however, proves that the AT&T system existed, was public and operated so as to anticipate claim 13. Dr. Kowalski testified as much when Ricoh took his deposition, and Ricoh has not controverted this evidence (other than by attacking Dr. Kowalski's motivations and credibility). Mot. at 5. The evidence is specific enough (and corroborated enough) to show that Dr. Kowalski is not fabricating his testimony.

Moreover, even Ricoh agrees that a simple, direct mapping in the old module binder results in realizable, implementation-specific hardware cells.⁵ Opp. at 8. Ricoh therefore implicitly concedes that the modification was not only possible but also simple, thereby further corroborating Dr. Kowalski's testimony. Ricoh likewise fails to provide evidence controverting Defendants' facts that the AT&T system was public.

2. The Kowalski Thesis was published in 1984.

Incredibly, Ricoh contends that there is no proof that Dr. Kowalski's CMU doctorate thesis is public. Opp. at 3-4. This ignores several pieces of evidence. First, Dr. Kowalski's thesis contains a formal, CMU Research Report No. (SRC Report CMU-CAD-84-29). Brothers Decl., Ex. 82 at cover page. It is well-known that university research reports are public, with summaries often circulated and requests for the complete thesis routinely fulfilled. Second, Dr. Kowalski's work was financed in part by the National Science Foundation, which disseminates, not hides, research. Brothers Decl., Ex. 82 at Acknowledgements. Third, Dr. Kowalski's thesis contains a limited distribution notice stating that the thesis has been, or will be, submitted for publication, has been issued as a Research Report for dissemination of its contents, and because of potential transfer of copyright to the publisher, distribution outside CMU is limited to peers and specific requests until publication. Brothers Decl.,

⁵ In doing so, however, Ricoh misrepresents even its own expert's statement by attributing a self-serving, fictional qualification ("at most") to Dr. Soderman. In fact, Dr. Soderman stated clearly, unequivocally and without reservation that "The module binder merely performs a simple process of matching a hardware cell with a module based on the class type and attribute of the module." Brothers Decl., Ex. 31 at 19.

Ex. 82 at Acknowledgements. These indicia on the document itself evidence that the thesis was clearly accessible to others.

In case there were any doubt about its publication, the Kowalski⁸⁵ reference cites the thesis — certainly not something that would be done if the thesis were not publicly available. Brothers Decl., Ex. 83 at 42 (note 8). So do other publications — for example, Donald E. Thomas published a paper in 1985 entitled “Observations on Comparing Digital Systems Synthesis Techniques” in the Proceedings of the 1985 ACM Thirteenth Annual Conference, citing to the Ph.D. thesis. Thus, the thesis was clearly accessible to others by 1985 at the latest. To put all doubt to rest, CMU’s online library catalog shows that the thesis was published in 1984. Ex. 101. Accordingly, no reasonable juror could find that Dr. Kowalski’s thesis was not publicly available before the critical date.

3. Defendants are not required to rely upon an expert opinion.

Although it complains about Defendants’ lack of expert testimony, Ricoh cites no authority requiring Defendants to rely on their invalidity expert’s opinions. For the purposes of this motion for summary judgment, defendants do not because the prior art is unambiguous and clearly anticipatory. Ricoh furthermore complains that there are “disputes” between Defendants’ position on this motion and its expert’s opinion. Yet, as noted above, an expert opinion (even from Defendants’ own expert, assuming that were the case) cannot contradict the actual facts.

III. CONCLUSION

For the foregoing reasons, Synopsys’ and Customer Defendants’ motion should be granted.

Dated: September 8, 2006

Respectfully submitted,

HOWREY LLP

By: /s/ Denise M. De Mory

Denise M. De Mory

Attorneys for Plaintiff

SYNOPSYS and Defendants AEROFLEX
INCORPORATED, AEROFLEX COLORADO
SPRINGS, INC., AMI SEMICONDUCTOR,
INC., MATROX ELECTRONIC SYSTEMS,
LTD., MATROX GRAPHICS INC., MATROX
INTERNATIONAL CORP., and MATROX
TECH, INC.